"Connected yet alone?" — A CORRELATIONAL STUDY ON SMARTPHONE USAGE, PERSONALITY TRAITS AND LONELINESS AMONG YOUNG ADULTS OF KOLKATA

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This is to certify that the dissertation entitled "Connected yet alone? — A CORRELATIONAL STUDY ON SMARTPHONE USAGE, PERSONALITY TRAITS AND LONELINESS AMONG YOUNG ADULTS OF KOLKATA" submitted by Riyanka D. Sharma, a 2 year M.Se student in Rehabilitation Psychology, Sister Nivedita University, is a bonafied work, which may be placed before the board of examiners for their evaluation. This is in partial fulfillment for the Degree of M.SC in Rehabilitation Psychology, Sister Nivedita University

This is an original study done by the candidate and has not been submitted by her before any form for any other degree of this University or any other University.

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PLAGIARISM CERTIFICATE

"I, RIYANKA D. SHARMA, hereby declare that the research work titled, "Connected yet alone? — A CORRELATIONAL STUDY ON SMARTPHONE USAGE, PERSONALITY TRAITS AND LONELINESS AMONG YOUNG ADULTS OF KOLKATA" conducted by me, has been completed with full honesty and integrity. I confirm that the work is original, and all sources of information have been appropriately acknowledged and cited. Furthermore, I affirm that the research work has undergone thorough plagiarism checks to ensure its authenticity. I take full responsibility for the content and findings presented in this research."

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ABSTRACT

Nowadays, despite growing digital interconnectivity, young individuals continue to experience high levels of loneliness. This study investigates the relationship between smartphone usage, three dimensions of personality, and loneliness among urban young adults in Kolkata. Data from 29 participants aged 19 to 29 were obtained using the NEO Five-Factor Inventory (NEO-FFI), Smartphone Usage Questionnaire (SUQ), and the UCLA Loneliness Scale (Version 3). Purposive sampling was used to recruit participants for including males and females. Descriptive statistics like mean, standard deviation and Spearman's rho were used as statistical tools, and indicated no significant relationship was found through the statistical analysis. Though high levels of neuroticism and extraversion, as well as somewhat high conscientiousness, were revealed. The study emphasises the necessity of culturally sensitive and contextually grounded digital behaviour models, as well as personalised approaches to digital health.

Keywords: Neuroticism, Young adult, Urban, Loneliness, Smartphone use, Boredom, Interpersonal relations, Conscientiousness, Social media, Technology, Technostress

INTRODUCTION

As the world grows more interconnected through digital technology, a strange paradox emerges: Despite constant virtual communication, feelings of loneliness and social isolation are rising (WHO, 2021). This paradox is amplified among young inhabitants in urban locations such as Kolkata, where fast-paced lives and digital device usage dominate everyday interactions(Ochnik et al., 2024). The transition from face-to-face contact to digital interactions has changed the nature of social relationships, sometimes enhancing them but more frequently leading to emotional isolation.

At the heart of this phenomenon is the subject of individual differences—how personality qualities determine how people use digital gadgets and how this usage affects their feelings of loneliness. The Big Five personality traits—extraversion, neuroticism, conscientiousness, agreeableness, and openness—provide a comprehensive framework for understanding these differences. For example, people with high Neuroticism may participate in more passive digital consumption, exacerbating feelings of isolation, whereas extroverts may use digital platforms for active communication, perhaps alleviating loneliness.
Generation Z, frequently dubbed the loneliest generation, has disturbingly high levels of social isolation compared to earlier cohorts(*Gen-Z, The Loneliness Epidemic And The Unifying Power Of Brands*, 2023). Recent empirical research demonstrates that the ubiquitous integration of digital technology, while aiming to increase connectivity, may exacerbate feelings of loneliness among these young people(Coombs, 2020).

Loneliness is a subjective sense of inadequacy in one's social network. These deficits might be statistical and subjective; loneliness may result from a lack of social contacts and the impression that these relationships are insufficiently rewarding(Perlman & Peplau, 1981).
Paired with a considerable amount of phone use and different facets of personality types, especially agreeableness, conscientiousness, and extraversion(Stachl et al., 2017), were observed to be using different smartphone applications.

The rapid proliferation of digital gadgets has profoundly altered how people connect, communicate, and create relationships. Virtual interactions are increasingly replacing traditional face-to-face contact as smartphones, social media platforms, and instant messaging apps become more commonplace. This change provides convenience and accessibility, allowing people to keep in touch across geographies and time zones. However, technology also has a paradoxical effect: as digital connectivity grows, meaningful social relationships can deteriorate, leading to feelings of social separation and loneliness.
Young adults rely heavily on digital devices in metropolitan places such as Kolkata, where fast-paced lifestyles and urban pressures reign supreme.
Digital environments are frequently used as key venues for socialisation, amusement, and emotional expression(Ochnik et al., 2024). However, the quality of these conversations can be shallow, missing the depth and emotional nuance of in-person encounters(Annamalai et al., 2024). The constant availability of virtual contacts (Ayyagari et al., 2011) leading to

technostress can also blur the divide between personal and social life, leading to digital fatigue (Hu, 2022) and feelings of loneliness.

LITERATURE REVIEW

Since the dawn of humanity, humans have had an innate need to connect with others—a social need, rather, where we want to belong and be part of a clique (Erikson, 1994); when this need is not fulfilled, it causes emotional pain, feelings of desolation, depression, and much more (King-Hill, 2017).

Smartphones have long contributed to loneliness. In the present, individuals increasingly turn to their phones as surrogate companions as loneliness rises, seeking digital connections to fill the void.(Cacioppo et al., 2006).

This technological solution, however, presents a paradox: while smartphones offer unprecedented access to social networks, research suggests they may simultaneously contribute to feelings of isolation.

The relationship between loneliness and smartphone usage appears bidirectional and complex, potentially moderated by individual differences in personality. The Big Five personality traits—Extraversion, Neuroticism, Conscientiousness, Agreeableness, and Openness—may influence both how people use their smartphones and how this usage affects their experience of loneliness. For instance, individuals high in Neuroticism might engage in more passive social media consumption, which has been associated with increased loneliness. In contrast, those high in extraversion might use their devices more for active communication, potentially mitigating feelings of isolation(Buecker et al., 2020).

1.1.1. ***Loneliness***

Despite the world being more connected than ever, in recent years, the loneliness epidemic has affected an estimated 15-20% of the general population. According to the World Health Organisation, loneliness affects around 10% of teens and 25% of older adults globally (WHO, 2021). It has primarily been observed among young people in New Zealand, the United States, and Japan, where younger people reported feeling lonely more frequently than the elderly (Ortiz-Ospina & Roser, 2024)and India, where the loneliness burden was found to be 41% in one of the systematic reviews, where the pooled participants numbered 3,169, representing the seven prevalence studies (Hossain et al., 2020).

Loneliness profoundly impacts one's psychological, social and physiological health. The Loneliness model by Cacioppo et al., (2006), posits that social isolation is akin to feeling unsafe, and this fires up the very primal feelings of hypervigilance, accompanied by presumed "social threats" and cognitive distortions, such as expecting social interactions to go "awry"/'awkward", and a constant negative rumination of the certain negative aspects to a social interaction they have had in the past, fueled by a self-fulfilling prophecy that it would be beneficial for the others as well as them if they distance themselves from interacting with others – given that they believe the cause of the social distance is linked to others and beyond their control.

A study by Wheeler et al. (1983)suggested that even during interactions among males, there might be a perceived significant gap between them due to the lack of emotionality expressed, which is more often than not associated with psychological femininity. It was also noted that males reported experiencing loneliness more than females.

1.1.2. ***Trendsetter in the last 5 years***

Smartphones have become indispensable in our lives in the past few decades. There are 4.88 billion smartphone users worldwide, accounting for about 60.42% of the global population, with India in second place with a whopping 659 million users(Gill, 2025).

According to data collated by Wikipedia, advanced economies such as the United States and the United Kingdom have smartphone penetration rates of roughly 81.6% and 78.9%, respectively, and emerging markets such as China and India exhibit penetration rates of around 63.4% and 31.8% *('List of Countries by Smartphone Penetration, ' 2024)*.

Growth rates vary by region, reflecting differences in infrastructural development, economic conditions, and policy efforts. Eastern Europe and Latin America have experienced rapid growth, fuelled by high-tech industry and extensive internet literacy. In contrast, portions of Sub-Saharan Africa continue to see poor adoption due to a lack of inexpensive devices and dependable internet connectivity. Latin America is on a sustained upward trend, driven by urbanisation and expanding middle-class populations(Financial Times, 2024).

Income, education, and urbanisation all substantially impact smartphone adoption. Higher-income households may afford more advanced gadgets and data plans, whereas lower-income groups frequently rely on older, less expensive versions. Education is important since technologically savvy populations are more likely to adopt smartphone technology. Furthermore, urban locations tend to have higher adoption rates because of superior network infrastructure compared to rural places(Baishya & Samalia, 2019).

1.1.3. *Navigating the OCEAN of Smartphone Usage*

Coming to BIG 5 OR NEO-FFI, otherwise known as the NEO Five-Factor Inventory, is a personality inventory by Costa & McCrae, (1992). It is a well-known personality assessment tool that measures the five fundamental aspects of personality. This 60-item questionnaire offers a comprehensive yet quick method for understanding individual differences in personality traits.

The NEO-FFI is based on the Five-Factor Model (FFM) of personality, which holds that five broad, independent dimensions may thoroughly define human personality:

- Neuroticism (N):
- Extraversion (E):
- Openness to Experience (O):
- Agreeableness (A):
- Conscientiousness (C):

This 60-item, 5-point Likert scale questionnaire measures the domains as mentioned above, i.e. traits. It has been validated and used throughout different cultures and is widely administered to people aged 18 and above.

In one of the studies conducted by Schutter et al. (2020), with 474 participants recruited from mental health care institutions and general practitioners in five different regions in the Netherlands, it was observed that people with higher neuroticism and lower extraversion in women and lower agreeableness in both men and women were associated with loneliness.

In another meta-analytic report by Mund & Neyer (2019), it was found that Agreeableness and Conscientiousness are negatively correlated to problematic phone usage, but higher levels of Neuroticism and lower levels of extraversion were correlated positively to problematic phone usage.

Higher degrees of neuroticism are associated with increased smartphone usage ($r=0.287$), which is a positive correlation(Yan et al., 2024). In a study conducted by Takao (2014), it was observed that with higher smartphone usage or rather, with problematic smartphone use, it has a higher correspondence with higher levels of neuroticism, lower levels of extraversion and openness-to-experience.

However, contrary to the aforementioned studies, Gao et al. (2020) showed that "...In conclusion, high neuroticism, high extraversion, low agreeableness, and low conscientiousness are associated with Problematic Phone Usage(PMPU)."

This finding is conceptually consistent because conscientiousness includes attributes like self-discipline, poor impulse control leading to procrastination, and less inclination in goal-directed behaviour (K. Gao et al., 2021). Individuals with lower scores in this dimension may struggle to control their smartphone usage, resulting in patterns of excessive screen time and trouble disengaging from their gadgets. First, less conscientious people often have lower self-regulatory capacity, which might make it harder to limit their use of technology despite the negative implications. Second, the trait's relationship with poor impulse control may emerge as reflexive phone checking and digital diversions. Thirdly, it relates to time management, which is inversely correlated to procrastination.

With lower levels of agreeableness, there is a full circle of political conservatism and spending time online(again, low conscientiousness)(Jost et al., 2018). People who score high on low levels of openness/agreeableness tend to fall on the conservative end of the spectrum regarding their outlook on life and stances regarding lifestyle and politics(Xu et al., 2021).

1.1.4. *Intersectional Analysis: Loneliness, Personality, and Smartphone Use*

University students are far more likely to use smartphones for recreational purposes rather than for school or work. As demonstrated, leisure benefits both the mind and the body. This over-reliance on leisurely behaviour can be indicative of low conscientiousness and is seen in people with lower levels of extraversion and higher levels of neuroticism(Lepp et al., 2015). With openness-to-experience, there is a desire to seek out new and novel experiences, such as searching and researching for things, reading up articles, using a variety of software applications for the said purpose of interacting/discuss(Chittaranjan et al., 2011), time spent on forums to debate and discuss, sharing information and learning etc, spending time on nuances and further investigations into the predictability of time spent on voice calls/text messaging and the number of individuals called/exchanged text messages yielded some significant conclusions on how it correlates to openness-to-experience(S. Lee et al., 2014).

Uses and Gratifications Theory: According to this hypothesis, people deliberately choose the media they consume according to their requirements and desired rewards(Katz, 1959). Depending on the particular rewards people seek, some personality factors may predict distinct smartphone usage patterns in the context of your research. For example, extroverts may use smartphones primarily for social connection(Menon & Meghana, 2021), whereas people with high neuroticism may use them for emotional regulation.
Unlike previous media theories, which considered audiences as passive recipients, UGT sees users as active media consumers who make conscious decisions based on psychological needs and expected pleasure.
The idea highlights five major categories of requirements that media use might satisfy:

- Cognitive requirements include the desire for information, knowledge, and understanding.
- Affective wants are the pursuit of aesthetic, emotional, and enjoyable experiences.
- Personal integrative needs: Increasing confidence, status, and credibility
- Social integrative needs: Strengthening relationships with family, friends, and society.
- Tension relief requires escape and diversion from concerns and routines.

In the context of smartphone use, different personality qualities are expected to predict varied patterns of gratification-seeking behaviours:

Neuroticism: Individuals with strong neuroticism may primarily utilise smartphones for stress relief and emotional regulation. To cope with bad feelings, they may engage in passive scrolling, entertainment consumption, and escapism (Akyol et al., 2021; Panova & Lleras, 2016). This usage habit may temporarily relieve anxiety but fails to address underlying emotions of loneliness, potentially leading to a self-reinforcing loop.

Extraversion: According to Marengo et al. (2020), highly extraverted people tend to use their smartphones to seek social connections and entertainment. They use communication apps, social media for active engagement, and platforms that facilitate social coordination. This usage pattern is consistent with their sociable nature and may supplement their face-to-face interactions, potentially mitigating loneliness.

Openness to Experience: Those with a high level of openness tend to seek information and unique experiences through their devices. They may devote a significant amount of time to researching instructional content, various views, and creative applications (Chittaranjan et al., 2011). This intellectually stimulating activity may increase their sense of connectedness to ideas and communities of interest, potentially alleviating certain types of loneliness but not necessarily resolving social loneliness.

Conscientiousness: Individuals with a high level of conscientiousness use smartphones for organisational, productivity, and goal attainment purposes. They may prioritise planning apps, instructional resources, and limited recreational use (Stachl et al., 2017). This planned approach to smartphone use may help people maintain a balanced lifestyle that includes adequate face-to-face social connection, potentially shielding them from loneliness.

Agreeableness: Those with high agreeableness frequently utilise smartphones to preserve harmonious relationships and support networks. They may check in with friends and family often, express care via texting, and engage in supportive social media conversations. This relationship-oriented behaviour may improve their social relationships, thus lowering loneliness.

Social Enhancement VS Social Compensation Hypothesis: In accordance with the **social enhancement theory**, socially skilled individuals (for example, those with high extraversion) employ digital tools to strengthen their already robust social networks.

On the other hand, **social compensation theory** proposes that socially anxious or solitary individuals (e.g., those with a high neuroticism level) use digital technologies to compensate for deficits in in-person relationships (C. Lee et al., 2020).

With heavy smartphone use, there is an increased association of variables like lower levels of conscientiousness and higher levels of loneliness. In this scenario, low conscientiousness results in problematic smartphone use, contributing to loneliness (Ormstad et al., 2020).

The displacement theory proposes that time and resources spent on one activity, most typically digital media consumption, can supplant those allocated to more socially engaged or cognitively rewarding hobbies. Essentially, it suggests that excessive smartphone use or media engagement may cannibalise possibilities for face-to-face conversations and other constructive behaviours, resulting in reduced social well-being. Contrary to this, the stimulation theory holds that media and technology can enhance or promote human connections rather than replace them. It implies that using digital platforms might provide new social outlets, thereby improving communication and social support networks(Winstone et al., 2021).

From a personality standpoint, excessive smartphone use may exacerbate feelings of loneliness for introverts, who seek more meaningful, deeper one-on-one connections — yet too much digital interaction can feel shallow and unsatisfying. If individuals use their phones to avoid face-to-face conversations, it may exacerbate social isolation and make them feel more lonely(Winstone et al., 2021). Extraverts, on the other hand, thrive on social engagement and stimulation, even if it takes the form of technology. Smartphone use, such as texting, video calls, and social media, can help them retain their social networks and provide the continual connection they require. So, rather than increasing loneliness, it may reduce it by providing additional chances for social engagement(Zhang et al., 2023).

METHODOLOGY

The current study investigates the associations between personality traits (neuroticism, extraversion, and conscientiousness), smartphone use patterns, and loneliness among young adults in Kolkata. The goal of this study is to look into how individual personality differences influence smartphone usage behaviours, as well as how these factors interact to affect feelings of loneliness.

The present study attempted to investigate the relationships between three key dimensions: personality traits (specifically neuroticism, extraversion, and conscientiousness), smartphone usage patterns (across five dimensions: interpersonal relationships, precious possession, companionship, evasion, and multiple utility), and levels of loneliness among young adults aged 19 to 29 years in Kolkata.

Standardised tools are regarded as the cornerstone for evidence-based evaluation. These evaluation instruments have been statistically validated and reliable, allowing for precise measurement of the constructs under research. They analyse replies so that the resulting dimensions can be operationally specified.
The personality traits have been measured using the NEO Five-Factor Inventory (NEO-FFI) developed by Costa & McCrae (1992), smartphone usage patterns have been assessed through the Smartphone Usage Questionnaire (SUQ) developed by (Mukherjee & Dasgupta, 2020), and loneliness has been measured using the UCLA Loneliness Scale-Version 3 (UCLA-3) developed by Russell (1996).

2.1.1. *Objectives*

1. To determine the relationship between the Big Five personality factors and patterns of smartphone usage among young adults aged 19-29 in Kolkata.
2. To determine the relation between smartphone usage patterns and levels of loneliness.

3. To identify the relationship between smartphone usage and the level of loneliness

2.1.2. ***Hypotheses***

H1: There is no significant relationship between Neuroticism and smartphone usage
H2: There is no significant relationship between Neuroticism and the level of loneliness
H3: There is no significant relationship between Extraversion and smartphone usage
H4: There is no significant relationship between Extraversion and the level of loneliness
H5: There is no significant relationship between Conscientiousness and level of loneliness
H6: There is no significant relationship between Conscientiousness and smartphone usage

2.1.3. ***Variables***

1. NEOFFI Traits (choosing only three of them):
    - Neuroticism
    - Extraversion
    - Conscientiousness
2. Smartphone Usage

    (a) Smartphone use and interpersonal relationships

    (b) Smartphone as a precious possession

    (c) Smartphone as a companion

    (d) Smartphone as a tool for evasion

    (e) Smartphone as an instrument of multiple utility

3. ***Loneliness***

2.14. **Tools/Measures**

- ➔ NEO Five-Factor Inventory (NEO-FFI): A 60-item questionnaire measuring the five domains of personality (Costa & McCrae, 1992). Participants will respond on a 5-point Likert scale ranging from "strongly disagree" to "strongly agree." The NEO-FFI has demonstrated good reliability with Cronbach's alpha ranging from 0.75 to 0.83 across the five domains.
- ➔ Smartphone Usage Questionnaire (SUQ) (Mukherjee & Dasgupta, 2020): A self-report measure developed for this study based on previous research in the field. The questionnaire will assess:
    - ◆ Average daily time spent on smartphones (hours)

- Frequency of use for different applications
- Purposes of smartphone use
- Self-perceived dependence on smartphones

→ UCLA-3: A 20-item scale measuring subjective feelings of loneliness and social isolation (Russell, 1996). Participants respond on a 4-point scale ranging from "never" to "always." The scale has demonstrated high internal consistency with Cronbach's alpha ranging from 0.89 to 0.94.

2.1.5. SAMPLE

Population: Young adults (19-29 years) residing in Kolkata, India.

Sample size: The study had 29 individuals. While this sample size is smaller than that indicated by a statistical analysis for medium effect sizes, it is adequate for an exploratory examination of correlational associations.

2.1.6. Inclusion/Exclusion criteria:

- Inclusion criteria
  - Young adults aged 19-29 years
  - Current residents of Kolkata
  - Smartphone owners who use their devices daily
  - Able to understand and complete questionnaires in English
  - Willing to provide informed consent for participation in the study
- Exclusion criteria
  - Individuals with diagnosed psychiatric conditions or disabilities that might significantly impact social behaviour or smartphone usage patterns
  - Participants who have been part of similar studies on smartphone usage and personality within the past 6 months
  - Individuals who use smartphones primarily for professional or work purposes rather than personal use
  - If participants were unable to complete all three assessment tools (NEO-FFI, Smartphone Usage Questionnaire, and UCLA-3 Loneliness Scale).

2.1.7. Procedure

1. Purposive sampling was used to recruit participants from colleges and universities in Kolkata who matched the inclusion requirements.
2. All participants were given complete information about the study's aims, procedures, confidentiality measures, and the opportunity to withdraw before participation. Written informed consent will be obtained from each participant.
3. Participants must complete a sociodemographic questionnaire collecting information on age, gender, education level, and employment status.

a. The NEO Five-Factor Inventory (NEO-FFI) will be administered to measure the three focal personality traits (Neuroticism, Extraversion, and Conscientiousness).
b. Participants will complete the Smartphone Usage Questionnaire (SUQ) to assess their smartphone usage patterns across five dimensions (interpersonal relationships, precious possession, companionship, evasion, and multiple utility).
c. The UCLA-3 Loneliness Scale will be used to assess the participants' subjective feelings of loneliness and social isolation.

4. Questionnaires were distributed individually in a quiet, relaxing environment. The order of surveys was counterbalanced to account for order effects.
5. The complete assessment is expected to take approximately 25-30 minutes per participant.
6. Following completion of all measures, participants were debriefed about the specific aims of the research and provided with contact information should they have questions or concerns.
7. Statistical analysis applications like SPSS were conducted to examine correlations between personality traits, smartphone usage patterns, and loneliness as specified.

2.1.8. **Statistics**

For the data analysis purpose of the present study. SPSS (Statistical Package for Social Sciences) was used, in which descriptive and correlational analyses were made according to the decision rules for testing the null hypothesis. In the first half, the mean and standard deviation were calculated, as per the descriptive statistics needs.

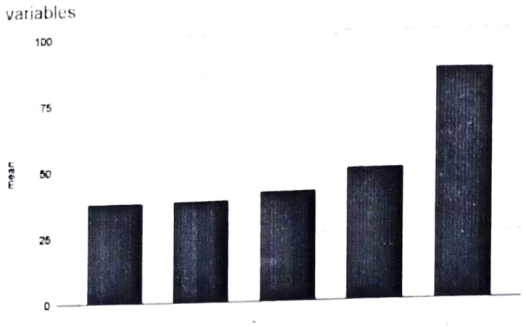
In the second half, due to the sample size being relatively small (N=29) and non-normal distribution of data, non-parametric tests were employed. Specifically, Spearman's rho or Spearman's rank correlation coefficient was employed to examine the correlation between smartphone usage patterns and personality types (neuroticism, extraversion, and conscientiousness) and loneliness.
This will aid in determining the direction and strength of correlations between the variables being investigated, as well as testing the six null hypotheses (H1-H6).
Statistical significance will be determined using a p-value of less than 0.05 ($p<0.05$) throughout the analyses.

RESULTS

TABLE 1: SHOWING THE MEAN VALUES OF THE VARIABLES

Variables	Smartphone	Neuroticism	Extraversion	Conscientiousness	Loneliness
Mean (x)	85.9	38.3	37.8	41.0	49.3

Below is the graph visualising the mean of the variables.

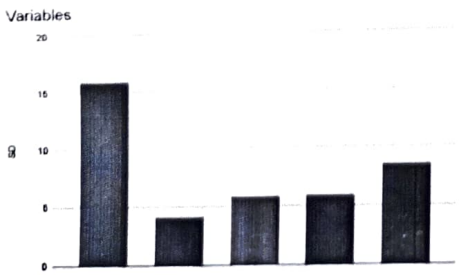


From the graph plotted above, it can be interpreted that the lowest mean is of Extraversion being 37.8, followed by Neuroticism (38.3), Conscientiousness (41), Loneliness (49.3) and finally, Smartphone being the highest with a mean score of 85.9.

TABLE 2: SHOWING THE SD OF THE VARIABLES

Variables	Smartphone	Neuroticism	Extraversion	Conscientiousness	Loneliness
SD	15.9	4.14	5.81	5.93	8.56

Below is the graph visualising the SD of the variables.



Thus, from the plotted graph above, it can be interpreted that the SD of the variable Smartphone is higher (15.9) as compared to the rest of the variables.

TABLE 3: SHOWS THE CORRELATION MATRIX (Spearman's correlation coefficient(r)) CONCERNING SMARTPHONE USAGE AND OTHER VARIABLES

	Neuroticism	Extraversion	Conscientiousness	Loneliness
Smartphone use	0.069	-0.025	0.242	0.280

Neuroticism and smartphone usage: $r = 0.069$, Conscientiousness and smartphone usage: $r = 0.242$, Loneliness and smartphone usage: $r = 0.280$ – all have relationships that are not statistically significant, therefore accepting the null hypothesis.
Extraversion and smartphone usage were found to be $r = -0.025$, implying a negligible relationship that is not statistically significant. As such, the data provides no meaningful evidence to suggest a consistent relationship between levels of extraversion and smartphone dependency.

DISCUSSION

The present study examined the relationships between personality types (neuroticism, extraversion, conscientiousness), smartphone usage patterns and loneliness among young adults in Kolkata. The results revealed non-significant correlations between the variables under investigation.

The mean smartphone usage score was 85.9 (SD = 15.9), which was slightly lower than the established average of the original Smartphone Use Scale (M = 92.5). While this reflects slightly lower smartphone usage compared to normative data, the very high standard deviation (15.9) indicates a wide range of usage patterns throughout the sample, implying that while some people may use their phones seldom, others are likely heavy users.

In Table 2, the mean Neuroticism score was 38.3 (SD = 4.14), which is in the "very high" category on the NEO-FFI scale, indicating that the sample, on average, had increased emotional reactivity, vulnerability to stress, and a predisposition towards negative affect. Similarly, the mean Extraversion score was 37.8 (SD = 5.81), which falls into the "very high" category. This suggests that individuals indicated high sociability, assertiveness, and a general desire for social engagement. The mean Conscientiousness score was 41.0 (SD = 5.93), indicating "high" goal-directed behaviour, organisation, and self-discipline.

The mean loneliness score was 49.3 (SD = 8.56), putting it in the mid-to-high range of the UCLA-3 Loneliness Scale (20–80). Participants reported a moderate to heightened level of loneliness. Again, the standard deviation of 8.56 indicates a significant difference in individual experiences of social isolation across individuals.

The correlation between neuroticism and smartphone usage (r = 0.069), which is not statistically significant, does not support previous findings by researchers like Yan et al. (2024), who reported a stronger positive correlation (r = 0.287). This discrepancy may be attributed to cultural differences or the specific smartphone usage patterns measured in our study.

Similarly, the negative correlation between Extraversion and smartphone usage (r = -0.025) contradicts Takao's (2014) findings, which showed that lower levels of extraversion were associated with problematic smartphone use. Another study showed that extraversion may not be a good predictor of smartphone usage behaviours(Zhang et al., 2023).

Conscientiousness was found to be at (r = 0.242), in correlation with smartphone usage, which is also statistically insignificant, implying that there is insufficient evidence to support a linear relationship between these variables in the current sample(K. Gao et al., 2021).

The correlation between loneliness and smartphone usage (r = 0.280) is consistent with Winstone et al's (2021) displacement theory, which holds that excessive smartphone use may replace face-to-face encounters and contribute to feelings of loneliness. However, the non-significant relationship of the present finding may suggest further investigation towards other factors related to these variables.
The current study's outcome did not align with prior findings, such as those by Takao (2014) & Yan et al. (2024), which reported a stronger and more significant relationship between personality traits and smartphone usage. Several factors may have contributed to this inconsistency. First and foremost, the relatively small sample size (n = 29) limited the statistical power, reducing the chance of detecting significant effects even if they existed.

The multidimensional measurement of smartphone usage may have diluted trait-specific effects because various uses (e.g., evasion vs. utility) may coincide with multiple personality traits simultaneously. Finally, changes in approach, such as tool selection and type focus (just three of the Big Five), may contribute to divergence from existing research. These findings highlight the need to improve predictive models of digital behaviour to be more culturally sensitive and contextually grounded.

CONCLUSION

Thus, it can be concluded that:

H1: There is no significant relationship between Neuroticism and smartphone usage
H2: There is no significant relationship between Neuroticism and the level of loneliness
H3: There is no significant relationship between Extraversion and smartphone usage
H4: There is no significant relationship between Extraversion and the level of loneliness
H5: There is no significant relationship between Conscientiousness and the level of loneliness
H6: There is no significant relationship between Conscientiousness and smartphone usage

Therefore, all null hypotheses are accepted.

LIMITATIONS

While the current study provides useful insights into the relationships between personality, smartphone usage, and loneliness among young adults in Kolkata, some limitations must be recognised.
First, the sample size was limited (N = 29), which limits statistical power and generalisability of the findings. The small number of participants may have contributed to the non-significant correlations identified, limiting the capacity to safely extend the findings to a larger group. Furthermore, purposive and snowball sampling procedures may have introduced selection bias, reducing the sample's variety in terms of socioeconomic class, gender representation, or academic background.

Time constraints also created a barrier during data collection and analysis, potentially affecting the depth and breadth of participant feedback. Although self-report instruments are validated, they allow for social desirability bias and subjective mistakes, especially when dealing with sensitive themes such as loneliness or emotional regulation.

Additionally, the study concentrated solely on three Big Five types (neuroticism, extraversion, and conscientiousness), leaving out Openness and Agreeableness, which may also play important roles in digital behaviour and emotional outcomes.

Lastly, while the study looked at smartphone usage habits, it did not take into account the negative consequences of continuous digital exposure, such as technostress, sleep disruptions, eye strain, or the psychological toll of continual online comparison. Including such variables could have provided a more thorough understanding of the emotional consequences of digital dependency

IMPLICATIONS

The current study sought to investigate the subtle links between personality factors, smartphone usage patterns, and feelings of loneliness in young adults in Kolkata. The goal was to investigate if digital behaviour could be predicted or understood via the lens of personality, a psychological principle that underlies daily functioning. While previous research has found associations between qualities like neuroticism and problematic phone use, or extraversion and digital social interaction, little has been done in the Indian urban youth context, especially with a culturally diverse sample.

The implications of this study are twofold. On a theoretical level, the findings call into question the generalisability of global personality-behaviour models, emphasising the importance of culturally grounded frameworks that consider contextual factors such as scholastic stress, collectivist social structures, and changing digital norms. Practically, the study highlights the importance of personalised treatments in digital wellness. For example, mental health practitioners, educators and can benefit from recognising that being a "high smartphone user" is not always a problem—usage must be understood in light of personality, purpose, and context.

Furthermore, as loneliness among Generation Z and zillennials continues to climb despite hyperconnectivity, understanding how psychological features interact with technology use can lead to better prevention tactics for emotional isolation.

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APPENDIX

1. Informed consent form:

"Greetings! I am Riyanka D. Sharma, a second-year MSc student in Applied Psychology (Rehabilitation specialisation) at Sister Nivedita University. As part of my academic curriculum, I am conducting research under the supervision of Dr. Sudeshna Roy (Professor, Department of Psychology, Sister Nivedita University).
If you are between 19-29 years of age, residing in Kolkata, I would be grateful for your participation in this study. Participation in this study is completely voluntary, and one may choose to withdraw at any time.

Please note that your data will be used solely for academic research purposes and will be kept strictly confidential. Your privacy is of utmost importance to us. This survey will take approximately 15-20 minutes to complete.
Thank you for considering participation in this research.

Do you consent to volunteer? _____

If you have any questions about this study or your participation, you may contact at: sharmariyanka02@gmail.com

Signature of the participant (with date): _____

Signature of the researcher (with date): _____

Sociodemographic details

1. Name (in initials):
2. Age:
3.Gender:
   - □ Male
   - □ Female
   - □ Non-binary
   - □ Prefer not to say

3. Education Qualification:
   - □ Undergraduate Student
   - □ Postgraduate Student
   - □ Working Professional
   - □ Other (please specify): _____

4. Employment Status:
   - □ Student (not working)
   - □ Employed Full-time
   - □ Employed Part-time
   - □ Self-employed
   - □ Unemployed

5. Residence(Urban/Suburban/Rural)/
6. Location: _____

7. Living Arrangement:
   - □ With family

□ With roommates/flatmates
□ Alone
□ In hostel/PG

8. Relationship Status:
□ Single
□ In a relationship
□ Married
□ Other (please specify): _____

9. Medical History:
Have you ever been diagnosed with or currently experiencing:

10. Physical Health Conditions (Yes/No): ____
Please specify (if yes): _____

11. Any Mental Health Conditions (Yes/No): _____
Please specify (if yes): _____

A. **Questionnaire 1:** There are items listed below, which seek to explore one's personality characteristics. Please read each item carefully and provide a tick [✓] in only one response for each. Respond to all of the statements, making sure that you fill in the correct response.
Respond with **SD** = Strongly Disagree, **D** = Disagree, **N** - Neutral, **A** = Agree, **SA** = Strongly Agree.

1. I am not a worrier ____
2. I like to have a lot of people around me ___
3. I do not like to waste my time on daydreaming ____
4. I try to be courteous to everyone I meet ____
5. I keep my belongings clean and neat ____
6. I often feel inferior to others ____
7. I laugh easily ____

8. Once I find the right way to do something, I stick to it ____
9. I often get into arguments with my family and coworkers ____
10. I'm pretty good about pacing myself so as to get things done on time ___
11. When I'm in a great deal of stress, sometimes I feel like I'm going to piece ____
12. I don't consider myself to be "light hearted" _____
13. I am intrigued by the patterns I find in art and nature ____
14. Some people think I am selfish and methodical ____
15. I am not a very methodical person ____
16. I rarely feel lonely or blue ____
17. I really enjoy talking to people ____
18. I believe letting students hear controversial speakers can only confuse and mislead then ____
19. I would rather cooperate with others than compete with them ____
20. I try to perform all the tasks assigned to me conscientiously ____
21. I often feel tense and jittery ____
22. I like to be where the action is ___
23. Poetry has little to no effect on me ___
24. I tend to be cynical and skeptical of others' intentions ____
25. I have a clear set of goals and work towards them in an orderly fashion ____
26. Sometimes I feel completely worthless ____
27. I usually prefer to do things alone ____
28. I often try new and foreign foods ____
29. I believe that most people will take advantage of you if you let them ____
30. I waste a lot of time before settling down to work ____
31. I rarely feel fearful or anxious ____
32. I often feel as if I'm bursting with energy ____
33. I seldom notice the moods or feelings that different environments produce ____
34. Most people I know like me ____
35. I work hard to accomplish my goals ____
36. I often get angry at the way people treat me ____
37. I am a cheerful, high spirited person ____
38. I believe we should look to our religious authorities for decisions on moral issues ____
39. Some people think of me as cold and calculating ____
40. When I make a commitment, I can always be counted on to follow through ____
41. Too often, when things go wrong, I get discouraged and feel like giving up ____
42. I am not a cheerful optimist ____
43. Sometimes when I'm reading a poetry or looking at a work or art, I feel like a chill or wave of excitement ____
44. I'm hard headed and tough minded in my attitudes ____
45. Sometimes I'm not as dependable and or reliable as I should be ____
46. I am seldom sad or depressed ____

47. My life is fast paced ____
48. I have little interest in speculating on the nature of the universe or the human condition ____
49. I generally try to be thoughtful or considerate ____
50. I am a productive person who always gets the job done ____
51. I often feel helpless and want someone else to solve my problems ____
52. I am a very active person ____
53. I have a lot of intellectual curiosity ____
54. If I don't like people, I let them know ____
55. I never seem to be able to get organised ____
56. At times I have been so ashamed that I just want to hide ____
57. I would rather go my own way than be a leader of others ____
58. I often enjoy playing with theories and abstract ideas ____
59. If necessary, I'm willing to manipulate people to get what I want ____
60. I strive for excellence in everything I do ____

B. Questionnaire 2: This scale is focused on the usage of smartphones in the context of day to day life. This questionnaire consists of 30 items with 5 alternative answers. "ALWAYS", "FREQUENTLY", "SOMETIMES", "RARELY", "NEVER". Please respond to the questions according to how true they are for you. Each possible response is assigned a number. Please fill in the applicable number next to the respective statement, without leaving out any.

ALWAYS = 5
FREQUENTLY = 4
SOMETIMES = 3
RARELY = 2
NEVER = 1

1. I fiddle with my smartphone without realising. ___
2. I do not try to use my smartphone in places where it is prohibited. ___
3. My fingers often feel sore due to texting. ___
4. I use my smartphone for more than 10 hours each day. ___
5. My friends and family have commented on my excessive phone usage. ___
6. I feel nervous when my smartphone is not with me. ___
7. I keep my smartphone with me when I study. ___
8. I take my smartphone with me to the toilet. ___
9. My ideal gift to receive would be a higher model of a smartphone. ___
10. I sleep with my smartphone switched on next to me. ___
11. I avoid going to places where I can't use my smartphone. ___
12. I put my phone on silent or vibration mode when I am supposed to switch it off. ____
13. My smartphone is my constant companion. ____
14. I have had accidents while using my smartphone. ____
15. I use my smartphone to avoid people I am uncomfortable around. ___

16. I am completely dependent on my smartphone. ____
17. I do not use my smartphone when I am with friends or family. ____
18. My smartphone is my most important possession. ___
19. I don't feel lonely when my smartphone is with me. ___
20. I feel more comfortable talking over the phone than face-to-face. ___
21. I reach for my phone first thing in the morning. ___
22. I use the internet from my smartphone even when I have access to a computer. ____
23. I spend a major part of my pocket money on my smartphone every month. ___
24. I can concentrate better when my smartphone is not with me. ___
25. I go through old messages and photos on my smartphone when I am bored.
26. I keep checking my phone for notifications. ____
27. I find my phone cumbersome to carry around. ____
28. I use my smartphone as an escape from my problems. ___
29. I feel more comfortable talking face-to-face than texting. ___
30. It is difficult to imagine everyday life without my smartphone. ____

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3. Questionnaire 3: This questionnaire measures your loneliness. Instructions: The following statements describe how people sometimes feel. For each statement, please indicate how often you feel the way described by circling one of the responses below. Here is an example:
How often do you feel happy?
If you never felt happy, you would respond "never"; if you always feel happy, you would respond "always."

1. How often do you feel that you are "in tune" with the people around you?
   Never / Rarely / Sometimes / Always
2. How often do you feel that you lack companionship?
   Never / Rarely / Sometimes / Always
3. How often do you feel that there is no one you can turn to?
   Never / Rarely / Sometimes / Always
4. How often do you feel alone?
   Never / Rarely / Sometimes / Always
5. How often do you feel part of a group of friends?
   Never / Rarely / Sometimes / Always
6. How often do you feel that you have a lot in common with the people around you?
   Never / Rarely / Sometimes / Always
7. How often do you feel that you are no longer close to anyone?
   Never / Rarely / Sometimes / Always
8. How often do you feel that your interests and ideas are not shared by those around you?

Never / Rarely / Sometimes / Always

9. How often do you feel outgoing and friendly?

   Never / Rarely / Sometimes / Always

10. How often do you feel close to people?

    Never / Rarely / Sometimes / Always

11. How often do you feel left out?

    Never / Rarely / Sometimes / Always

12. How often do you feel that your relationships with others are not meaningful?

    Never / Rarely / Sometimes / Always

13. How often do you feel that no one really knows you well?

    Never / Rarely / Sometimes / Always

14. How often do you feel isolated from others?

    Never / Rarely / Sometimes / Always

15. How often do you feel that you can find companionship when you want it?

    Never / Rarely / Sometimes / Always

16. How often do you feel that there are people who really understand you?

    Never / Rarely / Sometimes / Always

17. How often do you feel shy?

    Never / Rarely / Sometimes / Always

18. How often do you feel that people are around you but not with you?

    Never / Rarely / Sometimes / Always

19. How often do you feel that there are people you can talk to?

    Never / Rarely / Sometimes / Always

20. How often do you feel that there are people you can turn to?

    Never / Rarely / Sometimes / Always